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LABORATORY EVALUATION OF AUSTRALIAN RATION PACKS, (U)  
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Armed Forces Food Science Establishment  
Scottsdale, Tasmania

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Laboratory Evaluation of Australian  
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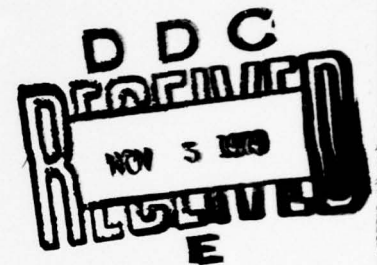
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DEPARTMENT OF DEFENCE  
ARMED FORCES FOOD SCIENCE ESTABLISHMENT

AFFSE REPORT 3/78

LABORATORY EVALUATION OF AUSTRALIAN  
RATION PACKS (U)

P. E. BODY and  
C. H. FORBES-EWAN



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SUMMARY

Results of analyses of ration pack items of the 1976/77 packaging programme are presented. Energy values are reported in Kilojoules.

Some of the rations have become nutritionally unbalanced, particularly with respect to protein content. Total energy values of some rations are also below the recommended level. (U)

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## Distribution

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# LABORATORY EVALUATION OF AUSTRALIAN RATION PACKS

## INTRODUCTION

Previous reports (AFFSE 1970-77)<sup>1-7</sup> have given the results of analyses of ration packs from preceding packaging programmes. This report details the evaluation of individual samples from the 1976-77 packaging programme with the exception of the Patrol Ration (Papua/New Guinea).

Single samples of each ration component were analysed for moisture, fat, ash, protein, vitamin B<sub>1</sub> (thiamine) and salt (NaCl). A value for carbohydrate content was calculated (by "difference"). This was used with the protein and fat results to calculate total energy value of each component and the proportion of energy derived from protein, fat and carbohydrate. Energy values are reported in Kilojoules (1 Kilocalorie  $\equiv$  4.186 Kilojoules).

The contents of the various ration packs are given in the Annexes together with the chemical evaluation. In Annex E the total energy distribution patterns are shown.

## METHODS

The methods used for chemical analyses are detailed in a previous report (AFFSE 4/70).

## RESULTS

A summary of the results is given below with full details in Annexes A.-D.

The recommended dietary allowances (Thomas and Corden, 1977)<sup>8</sup> are as follows:

For a "reference man" with a Grade II level of physical activity (applicable to infantry)

|                        |  |
|------------------------|--|
| Total energy intake    | 13,400 kJ  |
| Vitamin B <sub>1</sub> | 1.1 mg   |
| Protein                | 70 g minimum (should also be 10-12% of total energy) |

### Combat Ration (One Man) 1976-77

Menus A-E of this ration give the following analysis.

|        | Energy (kJ) | B <sub>1</sub> (mg) |
|--------|-------------|---------------------|
| Type A | 14,909      | 0.93                |
| B      | 14,955      | 0.99                |
| C      | 15,580      | 0.90                |
| D      | 14,577      | 0.91                |
| E      | 14,270      | 0.85                |

Energy distribution was as follows:

|        | Protein (%) | Fat (%) | Carbohydrate (%) | Protein (g) |
|--------|-------------|---------|------------------|-------------|
| Type A | 9.7         | 31.7    | 58.6             | 86          |
| B      | 9.5         | 32.0    | 58.5             | 85          |
| C      | 9.1         | 33.4    | 57.5             | 84          |
| D      | 9.7         | 31.9    | 58.4             | 84          |
| E      | 12.0        | 35.5    | 52.5             | 102         |

**Combat Ration (Ten Man) 1976-77**

Menus A-D of this ration gave the following analysis:

|        | Energy (kJ) | B <sub>1</sub> (mg) |
|--------|-------------|---------------------|
| Type A | 133,201     | 29.82               |
| B      | 121,422     | 19.91               |
| C      | 115,933     | 19.05               |
| D      | 131,342     | 17.86               |

Energy distribution was as follows:

|        | Protein (%) | Fat (%) | Carbohydrate (%) | Protein (g) |
|--------|-------------|---------|------------------|-------------|
| Type A | 15.8        | 28.0    | 56.2             | 1,046       |
| B      | 15.4        | 28.7    | 55.9             | 1,119       |
| C      | 16.8        | 28.1    | 55.1             | 1,314       |
| D      | 13.2        | 27.8    | 59.0             | 1,022       |

**Patrol Ration (One Man) 1976-77**

Menus A-C of this ration gave the following analysis:

|        | Energy (kJ) | B <sub>1</sub> (mg) |
|--------|-------------|---------------------|
| Type A | 12,141      | 2.36                |
| B      | 12,227      | 4.24                |
| C      | 12,062      | 3.68                |

Energy distribution was as follows:

|        | Protein (%) | Fat (%) | Carbohydrate (%) | Protein (g) |
|--------|-------------|---------|------------------|-------------|
| Type A | 21.5        | 25.5    | 53.0             | 155         |
| B      | 20.9        | 26.9    | 52.2             | 152         |
| C      | 19.9        | 24.3    | 55.8             | 143         |

**Emergency Flying Ration RAAF 1976-77**

This ration gave the following analysis:

|  | Energy (kJ) | B <sub>1</sub> (mg) |
|--|-------------|---------------------|
|  | 13,372      | 3.85                |



Energy distribution was as follows:

| Protein (%) | Fat (%) | Carbohydrate (%) | Protein (g) |
|-------------|---------|------------------|-------------|
| 9.7         | 26.6    | 63.7             | 77          |

### DISCUSSION

#### Combat Ration One Man

All rations were high in total energy and were approximately 1,000 kJ higher than results obtained in the 1975-76 ration pack evaluation.

Vitamin B<sub>1</sub> levels were lower than those obtained on 1975-76 ration packs (approximately 1.0 mg). The decrease was due to the low vitamin B<sub>1</sub> on chocolate, (0.15 mg compared to 1.48 mg). The results obtained were below the 1.1 mg level recommended by Thomas and Corden.

In all menus, except E, the percentage of protein was below the 10% recommended by Thomas and Corden. However, the total weight was in excess of the minimum recommended level of 70 g.

Salt levels in all ration packs were lower than those determined from 1975-76 results. This lower level was due to the decreased salt level in most components analysed.

Ration pack E had energy distribution different from packs A-D. This difference was caused by the lack of carbohydrates in corned beef.

Generally, analytical results obtained were unsatisfactory with the following items outside the prescribed chemical limits stipulated in the Australian Defence Forces Food Specifications (Table 1).

TABLE 1

| Item                       | Constituent            | Level Detected        | ADFFS Requirement |
|----------------------------|------------------------|-----------------------|-------------------|
| <b>COMMON ITEMS</b>        |                        |                       |                   |
| Chocolate                  | Vitamin B <sub>1</sub> | 0.33mg/100g           | 2.2mg/100g min    |
| Survival Biscuits          | Moisture               | 6.8%                  | 4% max            |
| Cheese                     | Fat                    | 43.61% FWFS           | 45% min FWFS      |
| Condensed Milk (Sweetened) | Fat                    | 5.7%                  | 9% min            |
| Butter Concentrate         | Moisture               | 0.4%                  | 0.3% max          |
| Coffee                     | Vitamin B <sub>1</sub> | 7.8mg/100g            | 21mg/100g min     |
| <b>MENU B</b>              |                        |                       |                   |
| Corned Beef Hash           | Moisture               | 74.9%                 | 73.0% max         |
| <b>MENU D</b>              |                        |                       |                   |
| Beef Soup Powder           | Vitamin B <sub>1</sub> | Less than 0.05mg/100g | 5.3mg/100g min    |
| <b>MENU E</b>              |                        |                       |                   |
| Chicken Soup Powder        | Vitamin B <sub>1</sub> | 0.2mg/100g            | 5.3mg/100g min    |

#### Combat Ration (Ten Man)

All ration packs were low in total energy (134,000 kJ recommended) with A, C and D being lower than similar results on 1974-75 (no samples analysed for 1975-76). Menu B being higher (133,201 kJ compared to 126,571 kJ).

In all menus the percentage of protein had increased over 1974-75 ration packs and were all above the 10-12% range set by Thomas and Corden. The weight of protein was above the 70g minimum recommended by the same authors.

Salt levels were similar to those obtained in 1974-75 with the exception of Menu C.

In this case a high salt level in chicken noodle soup powder gave an extremely high total for the particular menu.

Table 2 lists items below specifications.

TABLE 2

| Item                       | Constituent            | Level Detected        | ADFFS Requirement |
|----------------------------|------------------------|-----------------------|-------------------|
| <b>COMMON ITEMS</b>        |                        |                       |                   |
| Butter Concentrate         | Moisture               | 0.9%                  | 0.3% max          |
| Curry Powder               | Ash                    | 14.5%                 | 12.0% max         |
| Coffee                     | Vitamin B <sub>1</sub> | 5.4mg/100g            | 21.0mg/100 g min  |
| Vegetable Extract          | Salt (NaCl)            | 9.0%                  | 10-14%            |
| <b>MENU A</b>              |                        |                       |                   |
| Beef and Gravy             | Fat                    | 13.4%                 | 12.0% max         |
| <b>MENU B</b>              |                        |                       |                   |
| Tomato Soup Powder         | Vitamin B <sub>1</sub> | Less than 0.05mg/100g | 5.3mg/100g min    |
| <b>MENU C</b>              |                        |                       |                   |
| Chicken Noodle Soup Powder | Vitamin B <sub>1</sub> | 0.14mg/100g           | 5.3mg/100g min    |
| <b>MENU D</b>              |                        |                       |                   |
| Pea & Ham Soup Pdr         | Vitamin B <sub>1</sub> | 0.39mg/100g           | 5.3mg/100g min    |

#### Patrol Ration One Man

All rations were low in total energy (1,600 kJ approx) and illustrated a slight reduction in levels compared to 1975-76 results.

Vitamin B<sub>1</sub> levels were higher than the 1.1 mg minimum requirement recommended by Thomas and Corden and were all similar to results obtained on 1975-76 ration packs.

Salt levels were higher in Menus B and C than results on 1975-76 ration packs. However Menu A was particularly low due to the low levels detected in Lamb and Vegetable Curry and Savoury Steak Fingers.

In all menus the percentage protein was higher than the 12% maximum recommended by Thomas and Corden (21.5%, 20.9% and 19.9% respectively). Similarly, weights of protein were well in excess of the 70 mg minimum recommendation. Items below specification are shown in Table 3.

TABLE 3

| Item                | Constituent            | Level Detected | ADFFS Requirement |
|---------------------|------------------------|----------------|-------------------|
| <b>COMMON ITEMS</b> |                        |                |                   |
| Processed Cheese    | Fat                    | 44.75% FWFS    | 45% min FWFS      |
| Milk Instant        | Moisture               | 5.6%           | 4.5 max           |
| Coffee              | Vitamin B <sub>1</sub> | 5.1mg/100g     | 21.0mg/100 g min  |

#### Emergency Flying Ration

The ration was slightly low in energy (226 kJ) but was an increase on results obtained on the 1975-76 ration packs (low by 1,200 kJ).

Vitamin B<sub>1</sub> levels were satisfactory but lower than 1975-76 (3.85 mg cf 8.87 mg) due to the low results obtained on chocolate (3.1 mg cf 8.2 mg).

The salt level determined was satisfactory while the protein level determined was slightly lower than the recommended 10%.

Items below specification are shown in Table 4.

TABLE 4

| Item                | Constituent            | Level Detected        | ADFFS Requirement |
|---------------------|------------------------|-----------------------|-------------------|
| <b>COMMON ITEMS</b> |                        |                       |                   |
| Instant Milk        | Moisture               | 5.1%                  | 4.5% max          |
| Chocolate           | Vitamin B <sub>1</sub> | 1.9mg/100g            | 2.2mg/100g min    |
| Cheese              | Fat                    | 43.6% FWFS            | 45% min FWFS      |
| Coffee              | Vitamin B <sub>1</sub> | Less than 0.05mg/100g | 21.0mg/100g min   |
| Beef Block          | Moisture               | 4.2%                  | 7-11%             |

*GENERAL*

The results indicate that generally there has been little change in the nutritional balance of the ration packs. Combat Ration (One Man) and Emergency Flying Rations were both below the minimum percentage protein requirements. Patrol Ration (One Man) and Combat Ration (Ten Man) were both higher than the maximum percentage requirements. However, in all cases the weight of protein was in excess of the minimum requirements. This excess protein could lead to thirst problems, as stated in AFFSE Report 1/78.

Combat Ration (One Man) had satisfactory energy levels, the remaining ration types analysed being below the recommended energy levels.

Vitamin B<sub>1</sub> was satisfactory in all except Combat Ration (One Man) where the levels were below the recommended levels. Powdered soups (Tables 1 and 2) and chocolate (Tables 1, 2 and 4) were extremely low in Vitamin B<sub>1</sub> and both should be corrected as soon as possible.

Salt levels were generally similar to those previously reported.

The large numbers of components outside chemical specifications makes it clear that suitable quality control on products is not being undertaken. Steps should be taken to correct this failure with utmost urgency.

*ACKNOWLEDGEMENTS*

To C. Nelson, M. Lette and F. Kingsmith who carried out the bulk of the chemical analysis.

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**1976-77 PACKAGING PROGRAMME  
COMBAT RATION (ONE MAN)**

Annex A

| COMPONENT                                   | NET WEIGHT<br>g | COMPOSITION % |      |     |         |                 |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---|-----------------|---------------|------|-----|---------|-----------------|----------------|--------------------|-------------------|-------------------|
|   |                 | WATER         | FAT  | ASH | PROTEIN | SALT            | B <sub>1</sub> |                    |                   |                   |
| <b>ITEMS COMMON TO ALL RATION<br/>TYPES</b> |                 |               |      |     |         |                 |                |                    |                   |                   |
| Cereal Block                                | 59.2            | 3.9           | 19.8 | 1.2 | 9.0     | 0.3             | BDL            | 1,191              | 2,011             |                   |
| Biscuits - Survival                         | 99.2            | 6.8           | 17.9 | 1.9 | 9.4     | 1.0             | 0.252          | 1,894              | 1,910             |                   |
| Biscuits - Shortbread                       | 87.9            | 4.1           | 19.3 | 1.3 | 7.3     | 0.7             | BDL            | 1,753              | 1,995             |                   |
| Cheese                                      | 53.3            | 36.3          | 27.8 | 6.4 | 24.8    | 2.0             | 0.044          | 755                | 1,416             |                   |
| Chocolate                                   | 46.6            | 4.1           | 20.3 | 1.8 | 6.4     | 0.3             | 0.152          | 936                | 2,007             |                   |
| Chewing Gum                                 | 16.4            | 3.0           | -    | -   | -       | -               | -              | 268                | 1,634             |                   |
| Butterscotch                                | 49.5            | 1.9           | 4.9  | 0.7 | 2.1     | 0.7             | 0.009          | 861                | 1,739             |                   |
| Condensed Milk (Sweet)                      | 70.2            | 22.4          | 5.7  | 1.9 | 9.5     | 0.6             | 0.025          | 976                | 1,391             |                   |
| Sugar                                       | 84.0            | -             | -    | -   | -       | -               | -              | 1,416              | 1,680             |                   |
| Tea Bags                                    | 2.2             | -             | -    | -   | -       | -               | -              | -                  | -                 |                   |
| Coffee Instant                              | 3.9             | 2.9           | -    | 6.1 | 20.6    | 0.2             | 0.301          | 59                 | 1,529             |                   |
| Salt  | 7.1             | -             | -    | -   | -       | -               | -              | -                  | -                 |                   |
| Butter Concentrate                          | 25.5            | 0.4           | 90.0 | 3.2 | 3.7     | 2.5             | BDL            | 895                | 3,510             |                   |
| <b>TOTAL</b>                                |                 |               |      |     | 46.73   | g/pack<br>11.4  | 0.783          | 11,004             |                   |                   |
| <b>MENU - TYPE A</b>                        |                 |               |      |     |         |                 |                |                    |                   |                   |
| Ham and Egg Ration                          | 114.3           | 72.7          | 12.6 | 1.2 | 13.3    | 0.1             | BDL            | 805                | 704               |                   |
| Curry Powder                                | 3.5             | 8.6           | 7.0  | 8.8 | 13.7    | 1.8             | 0.024          | 53                 | 1,536             |                   |
| Beef and Vegetables                         | 229.5           | 73.6          | 6.3  | 0.7 | 8.8     | 0.1             | 0.126          | 1,293              | 563               |                   |
| Instant Rice                                | 52.5            | 9.9           | 0.3  | 0.4 | 6.1     | 0.2             | BDL            | 794                | 1,513             |                   |
| Plum Jam                                    | 23.5            | 24.3          | -    | -   | 0.9     | -               | BDL            | 299                | 1,272             |                   |
| Fruit Juice Powder (Orange)                 | 14.1            | 0.3           | -    | 0.6 | -       | 0.1             | -              | 234                | 1,660             |                   |
| Sliced Cling Peaches                        | 137.8           | 81.4          | -    | 0.2 | -       | 0.1             | -              | 427                | 310               |                   |
| <b>TOTAL (including common items)</b>       |                 |               |      |     |         | g/pack<br>12.25 | 0.93           | 14,909             |                   |                   |

BDL = Below Detectable Limits  
- = Not Analysed

2.

**1976-77 PACKAGING PROGRAMME**  
**COMBAT RATION (ONE MAN)**

| COMPONENT                             | NET WEIGHT<br>g | COMPOSITION % |      |     |         |                |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---------------------------------------|-----------------|---------------|------|-----|---------|----------------|----------------|--------------------|-------------------|-------------------|
|                                       |                 | WATER         | FAT  | ASH | PROTEIN | SALT           | B <sub>1</sub> |                    |                   |                   |
| <b>MENU - TYPE B</b>                  |                 |               |      |     |         |                |                |                    |                   |                   |
| Pork and Beans                        | 104.6           | 67.3          | 14.5 | 1.5 | 13.6    | 0.5            | 0.128          | 866                | 829               |                   |
| Curry Powder                          | 3.5             | 8.6           | 7.0  | 8.8 | 13.7    | 1.8            | 0.024          | 53                 | 1,536             |                   |
| Corned Beef Hash                      | 230.5           | 74.9          | 6.7  | 0.8 | 8.5     | 0.5            | 0.058          | 1,263              | 548               |                   |
| Instant Rice                          | 52.5            | 8.9           | 0.3  | 0.4 | 6.7     | 0.2            | BDL            | 803                | 1,530             |                   |
| Raspberry Jam                         | 24.4            | 25.2          | -    | -   | 1.2     | -              | -              | 306                | 1,257             |                   |
| Fruit Juice Powder (Lemon)            | 14.1            | 0.7           | -    | 0.7 | -       | 0.6            | -              | 233                | 1,656             |                   |
| Diced Cling Peaches                   | 137.8           | 81.4          | -    | 0.2 | -       | 0.1            | -              | 427                | 310               |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |     |         | g/pack<br>13.4 | 0.99           | 14,955             |                   |                   |
| <b>MENU - TYPE C</b>                  |                 |               |      |     |         |                |                |                    |                   |                   |
| Luncheon Meat (Camp Pie)              | 111.5           | 64.7          | 13.1 | 0.9 | 6.0     | 0.8            | 0.017          | 951                | 853               |                   |
| Curry Powder                          | 3.5             | 8.6           | 7.0  | 8.8 | 13.7    | 1.8            | 0.024          | 53                 | 1,536             |                   |
| Beef with Gravy                       | 228.6           | 65.2          | 11.8 | 0.8 | 11.6    | 0.1            | 0.071          | 1,871              | 818               |                   |
| Instant Rice                          | 52.5            | 8.9           | 0.3  | 0.4 | 6.7     | 0.2            | BDL            | 803                | 1,530             |                   |
| Apricot Jam                           | 24.5            | 25.0          | -    | -   | 0.8     | -              | -              | 309                | 1,261             |                   |
| Fruit Juice Powder (Lime)             | 14.0            | 0.3           | -    | 0.4 | -       | 0.1            | -              | 234                | 1,668             |                   |
| Diced Bartlett Pears                  | 138.2           | 84.2          | -    | 0.5 | -       | 0.1            | -              | 355                | 257               |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |     |         | g/pack<br>12.8 | 0.90           | 15,580             |                   |                   |

BDL = Below Detectable Limits

- = Not Analysed

3.

**1976-77 PACKAGING PROGRAMME**  
**COMBAT RATION (ONE MAN)**

| COMPONENT                             | NET WEIGHT<br>g | COMPOSITION % |      |      |         |                |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---------------------------------------|-----------------|---------------|------|------|---------|----------------|----------------|--------------------|-------------------|-------------------|
|                                       |                 | WATER         | FAT  | ASH  | PROTEIN | SALT           | B <sub>1</sub> |                    |                   |                   |
| <b>MENU - TYPE D</b>                  |                 |               |      |      |         |                |                |                    |                   |                   |
| Sausage & Veg                         | 117.5           | 78.7          | 2.5  | 1.2  | 6.7     | 0.3            | BDL            | 459                | 391               |                   |
| Soup Powder Beef                      | 15.1            | 4.2           | BDL  | 19.4 | 0.3     | 12.9           | BDL            | 160                | 1,067             |                   |
| Luncheon Meat                         | 215.7           | 70.1          | 11.3 | 2.1  | 10.8    | 0.8            | BDL            | 1,521              | 705               |                   |
| Blackberry Jam                        | 24.4            | 25.3          | -    | -    | -       | -              | 0.044          | 306                | 1,255             |                   |
| Potato and Onion Powder               | 48.6            | 4.3           | -    | 2.3  | 12.1    | 0.1            | 0.015          | 763                | 1,569             |                   |
| Diced Two Fruits                      | 140.7           | 84.5          | -    | 0.1  | -       | 0.1            | 0.065          | 364                | 259               |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |      |         | g/pack<br>15.6 | 0.91           | 14,577             |                   |                   |
| <b>MENU - TYPE E</b>                  |                 |               |      |      |         |                |                |                    |                   |                   |
| Beef and Egg Ration                   | 120.4           | 72.2          | 10.6 | 1.3  | 15.1    | 0.6            | BDL            | 801                | 666               |                   |
| Soup Powder Chicken                   | 14.5            | 2.9           | 0.2  | 15.3 | -       | 10.8           | 0.003          | 199                | 1,377             |                   |
| Corned Beef                           | 217.9           | 69.4          | 11.8 | 2.2  | 17.0    | 0.7            | BDL            | 1,592              | 731               |                   |
| Peach Jam                             | 25.3            | 26.9          | -    | 0.1  | -       | -              | BDL            | 310                | 1,226             |                   |
| Diced Two Fruits                      | 140.7           | 84.5          | -    | 0.1  | -       | 0.1            | 0.065          | 364                | 259               |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |      |         | g/pack<br>15.4 | 0.85           | 14,270             |                   |                   |

BDL = Below Detectable Limits  
- = Not Analysed

1.

**1976-77 PACKAGING PROGRAMME**  
**COMBAT RATION (TEN MAN)**  
 PACKED MARCH, 1977

| COMPONENT                               | NET WEIGHT<br>g | COMPOSITION % |      |      |         |                  |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---|-----------------|---------------|------|------|---------|------------------|----------------|--------------------|-------------------|-------------------|
|   |                 | WATER         | FAT  | ASH  | PROTEIN | SALT             | B <sub>1</sub> |                    |                   |                   |
| <b>ITEMS COMMON TO ALL RATION TYPES</b> |                 |               |      |      |         |                  |                |                    |                   |                   |
| Condensed Milk (Unsweetened)            | 811.4           | 71.9          | 6.9  | 1.5  | 8.0     | 0.4              | 2.937          | 4,798              | 591               |                   |
| Butter Concentrate                      | 336.2           | 0.9           | 92.1 | 2.9  | 2.1     | 2.2              | 0.252          | 11,940             | 3,541             |                   |
| Vegetable Extract                       | 101.7           | 33.3          | BDL  | 13.7 | 28.9    | 9.0              | 8.645          | 912                | 897               |                   |
| Sugar                                   | 854.6           | -             | -    | -    | -       | -                | -              | 14,358             | 1,680             |                   |
| Salt                                    | 85.8            | -             | -    | -    | -       | 98.5             | -              | -                  | -                 |                   |
| Soluble Coffee                          | 58.6            | 2.6           | 0.2  | 8.1  | 18.1    | 0.4              | 3.165          | 880                | 1,504             |                   |
| Whole Potatoes                          | 1,821.6         | 87.3          | -    | 1.1  | 1.6     | 1.0              | 0.692          | 3,542              | 195               |                   |
| Tomato Sauce (fortified)                | 235.4           | 67.2          | -    | 3.5  | 1.4     | 2.6              | 0.037          | 1,159              | 493               |                   |
| Tea                                     | 109.6           | -             | -    | -    | -       | -                | -              | -                  | -                 |                   |
| Curry Powder                            | 29.6            | 7.4           | 6.9  | 14.5 | 11.8    | 9.1              | 0.030          | 430                | 1,454             |                   |
| Bread, Supplement (assumed)             | -               | -             | -    | -    | -       | -                | -              | 30,139             | -                 |                   |
| <b>TOTAL</b>                            |                 |               |      |      |         | g/pack<br>167.98 | 15.76          | 68,158             |                   |                   |
| <b>MENU - TYPE A</b>                    |                 |               |      |      |         |                  |                |                    |                   |                   |
| Mince and Spaghetti                     | 1,775.6         | 28.3          | 12.5 | 1.3  | 4.2     | 0.2              | 7.067          | 11,352             | 639               |                   |
| Beef Noodle Soup Powder                 | 131.0           | 2.0           | 3.9  | 20.9 | 13.4    | 19.0             | 0.207          | 1,803              | 1,376             |                   |
| Chopped Pork and Cereal                 | 1,364.0         | 64.2          | 10.1 | 2.4  | 13.4    | 1.7              | 5.445          | 7,684              | 563               |                   |
| Green Peas                              | 900.8           | 83.1          | -    | 0.6  | 5.1     | 0.5              | 0.132          | 2,464              | 274               |                   |
| Beef with Gravy                         | 1,774.4         | 63.0          | 13.4 | 2.4  | 17.3    | 1.6              | 0.464          | 16,036             | 904               |                   |
| Whole Peeled Tomatoes                   | 849.6           | 93.5          | -    | 0.6  | 0.8     | 0.4              | 0.255          | 852                | 100               |                   |
| Fruit Pudding                           | 1,503.2         | 28.3          | 12.5 | 1.3  | 4.2     | 0.2              | 0.492          | 21,732             | 1,186             |                   |
| Raspberry Jam                           | 247.7           | 24.9          | -    | 0.1  | 1.5     | 0.1              | BDL            | 3,120              | 1,259             |                   |
| <b>TOTAL (including common items)</b>   |                 |               |      |      |         | 207.2            | 29.82          | 133,201            |                   |                   |

BDL = Below Detectable Limits  
 - = Not Analysed



2.

**1976-77 PACKAGING PROGRAMME**  
**COMBAT RATION (TEN MAN)**  
**PACKED MARCH, 1977**

| COMPONENT                             | NET WEIGHT<br>g | COMPOSITION % |      |      |         |               |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---------------------------------------|-----------------|---------------|------|------|---------|---------------|----------------|--------------------|-------------------|-------------------|
|                                       |                 | WATER         | FAT  | ASH  | PROTEIN | SALT          | B <sub>1</sub> |                    |                   |                   |
| <b>MENU - TYPE B</b>                  |                 |               |      |      |         |               |                |                    |                   |                   |
| Luncheon Meat - Type I                | 1,342.8         | 67.0          | 11.5 | 3.6  | 13.7    | 2.1           | 1.450          | 9,880              | 736               |                   |
| Steak and Kidney                      | 1,802.0         | 71.0          | 11.0 | 1.6  | 10.2    | 1.0           | 0.998          | 12,192             | 677               |                   |
| Beef and Beans                        | 1,863.6         | 65.1          | 8.0  | 2.2  | 13.6    | 1.2           | 1.116          | 13,392             | 719               |                   |
| Green Peas                            | 900.8           | 83.1          | -    | 0.6  | 5.1     | 0.5           | 0.132          | 2,464              | 274               |                   |
| Whole Kernel Sweet Corn               | 889.4           | 72.4          | 0.7  | 0.8  | 2.7     | 0.4           | 0.450          | 4,152              | 467               |                   |
| Fruit Salad                           | 1,784.4         | 82.4          | -    | 0.3  | 0.3     | 0.1           | BDL            | 5,176              | 290               |                   |
| Jam - Blackberry                      | 247.3           | 19.2          | -    | 0.3  | -       | 0.1           | BDL            | 3,343              | 1,352             |                   |
| Tomato Soup Powder                    | 175.7           | 1.4           | 5.7  | 15.4 | 4.4     | 13.8          | BDL            | 2,665              | 1,517             |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |      |         | <b>264.81</b> | <b>19.91</b>   | <b>121,422</b>     |                   |                   |
| <b>MENU - TYPE C</b>                  |                 |               |      |      |         |               |                |                    |                   |                   |
| Beef and Vegetable Curry              | 1,831.2         | 71.3          | 6.1  | 1.8  | 7.8     | 1.1           | 0.531          | 10,282             | 562               |                   |
| Chicken Noodle Soup Powder            | 1,389.0         | 2.8           | 2.4  | 22.6 | 13.7    | 18.7          | 1.896          | 1,811              | 1,304             |                   |
| Corned Beef                           | 1,372.6         | 52.5          | 16.6 | 3.5  | 26.7    | 2.7           | BDL            | 14,936             | 1,088             |                   |
| Green Beans                           | 898.8           | 90.0          | -    | 1.5  | 1.3     | 1.3           | BDL            | 1,336              | 149               |                   |
| Steak & Tomato Puree                  | 1,728.8         | 74.1          | 6.6  | 1.5  | 14.4    | 0.8           | 0.864          | 9,492              | 549               |                   |
| Carrots                               | 888.0           | 91.4          | -    | 1.0  | 0.1     | 0.8           | BDL            | 1,132              | 128               |                   |
| Sliced Clingstone Peaches             | 1,756.8         | 81.4          | -    | 0.4  | 0.5     | 0.1           | -              | 5,364              | 305               |                   |
| Jam Strawberry                        | 262.7           | 22.4          | -    | 0.1  | -       | 0.1           | -              | 3,421              | 1,302             |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |      |         | <b>525.00</b> | <b>19.05</b>   | <b>115,933</b>     |                   |                   |

BDL = Below Detectable Limits  
 - = Not Analysed

3.

**1976-77 PACKAGING PROGRAMME**  
**COMBAT RATION (TEN MAN)**  
**PACKED MARCH, 1977**

| COMPONENT                             | NET WEIGHT<br>g | COMPOSITION % |      |      |         |        |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---------------------------------------|-----------------|---------------|------|------|---------|--------|----------------|--------------------|-------------------|-------------------|
|                                       |                 | WATER         | FAT  | ASH  | PROTEIN | SALT   | B <sub>1</sub> |                    |                   |                   |
| <b>MENU - TYPE D</b>                  |                 |               |      |      |         |        |                |                    |                   |                   |
| Green Beans                           | 898.8           | 90.0          | —    | 1.5  | 1.3     | 1.3    | BDL            | 1,336              | 149               |                   |
| Fruit Pudding                         | 1,503.2         | 28.3          | 12.5 | 1.3  | 4.2     | 0.2    | 0.492          | 21,732             | 1,186             |                   |
| Steak & Kidney                        | 1,802.0         | 71.9          | 11.0 | 1.6  | 10.2    | 1.0    | 0.998          | 12,192             | 677               |                   |
| Pea and Ham Soup Powder               | 156.0           | 1.2           | 5.7  | 12.4 | 21.7    | 10.2   | 0.608          | 2,455              | 1,571             |                   |
| Jam Apricot                           | 256.0           | 22.5          | —    | 0.2  | —       | 0.1    | —              | 3,325              | 1,299             |                   |
| Beef and Vegetables                   | 1,819.0         | 75.4          | 3.2  | 1.5  | 8.4     | 1.1    | BDL            | 8,256              | 454               |                   |
| Red Kidney Beans                      | 962.6           | 66.6          | 0.3  | 2.1  | 7.1     | 1.3    | —              | 5,124              | 532               |                   |
| Luncheon Meat - Type 2                | 1,353.2         | 69.1          | 7.9  | 2.2  | 12.1    | 1.4    | —              | 8,764              | 684               |                   |
| <b>TOTAL (including common items)</b> |                 |               |      |      |         | 267.91 | 17.86          | 131,342            |                   |                   |

BDL = Below Detectable Limits

— = Not Analysed

1.

**1976-77 PACKAGING PROGRAMME**  
**PATROL RATION (ONE MAN)**

| COMPONENT                                   | NET WEIGHT<br>g | COMPOSITION % |      |     |         |      |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---|-----------------|---------------|------|-----|---------|------|----------------|--------------------|-------------------|-------------------|
|   |                 | WATER         | FAT  | ASH | PROTEIN | SALT | B <sub>1</sub> |                    |                   |                   |
| <b>ITEMS COMMON TO ALL RATION<br/>TYPES</b> |                 |               |      |     |         |      |                |                    |                   |                   |
| Processed Cheese Sticks                     | 43.6            | 35.6          | 28.9 | 3.5 | 21.6    | 0.4  | 0.036          | 534                | 1,224             |                   |
| Instant Milk                                | 7.4             | 5.6           | 0.1  | 5.9 | 34.3    | —    | 0.013          | 111                | 1,489             |                   |
| Chocolate                                   | 51.8            | 4.1           | 22.2 | 2.2 | 9.5     | 0.1  | 1.401          | 1,057              | 2,041             |                   |
| Rice  | 54.5            | 11.1          | 0.3  | 0.1 | 8.0     | —    | 0.023          | 815                | 1,497             |                   |
| Sugar                                       | 85.4            | —             | —    | —   | —       | —    | —              | 1,435              | 1,680             |                   |
| Coffee Instant                              | 10.2            | 3.9           | —    | 6.6 | —       | 0.1  | 0.519          | 153                | 1,504             |                   |
| Tea Bags                                    | 6.3             | —             | —    | —   | —       | —    | —              | —                  | —                 |                   |
| Salt  | 7.2             | —             | —    | —   | —       | 98.5 | —              | —                  | —                 |                   |
| Chewing Gum                                 | 15.9            | 3.2           | 12.6 | 0.9 | 0.5     | 0.1  | —              | 297                | 1,876             |                   |
| Biscuits — Shortbread                       | 87.4            | 4.1           | 18.4 | 0.4 | 3.5     | 0.1  | BDL            | 1,741              | 1,991             |                   |
| Biscuits — Raspberry Crunch                 | 87.3            | 7.8           | 16.9 | 0.5 | 2.4     | —    | 0.044          | 1,655              | 1,896             |                   |
| <b>TOTAL</b>                                |                 |               |      |     |         | 7.4  | 2.04           | 7,798              |                   |                   |
| <b>MENU — TYPE A</b>                        |                 |               |      |     |         |      |                |                    |                   |                   |
| Lamb and Vegetable Curry                    | 107.8           | 2.7           | 19.3 | 3.4 | 54.3    | 0.1  | 0.102          | 2,139              | 1,984             |                   |
| Savoury Steak Fingers                       | 108.5           | 1.3           | 9.6  | 2.9 | 64.7    | 0.1  | 0.217          | 1,965              | 1,811             |                   |
| Fruit Juice Powder (Orange)                 | 14.2            | 0.2           | 0.4  | 0.3 | —       | —    | BDL            | 239                | 1,679             |                   |
| <b>TOTAL (including common items)</b>       |                 |               |      |     |         | 7.5  | 2.36           | 12,141             |                   |                   |

BDL = Below Detectable Limits  
— = Not Analysed

2.

**1976-77 PACKAGING PROGRAMME**  
**PATROL RATION (ONE MAN)**

| COMPONENT                             | NET WEIGHT<br>g | COMPOSITION |      |     |         |      |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|---------------------------------------|-----------------|-------------|------|-----|---------|------|----------------|--------------------|-------------------|-------------------|
|                                       |                 | WATER       | FAT  | ASH | PROTEIN | SALT | B <sub>1</sub> |                    |                   |                   |
| <b>MENU - TYPE B</b>                  |                 |             |      |     |         |      |                |                    |                   |                   |
| Beef and Onions                       | 108.3           | 2.0         | 9.1  | 3.4 | 58.8    | 0.9  | 0.997          | 1,928              | 1,779             |                   |
| Roast Sliced Pork and Gravy           | 108.6           | 1.8         | 24.8 | 2.2 | 57.3    | 8.4  | 1.202          | 2,317              | 2,133             |                   |
| Fruit Juice Powder (Lemon)            | 14.0            | 0.2         | —    | 0.6 | —       | 0.9  | BDL            | 234                | 1,667             |                   |
| <b>TOTAL (including common items)</b> |                 |             |      |     |         | 17.6 | 4.24           | 12,277             |                   |                   |
| <b>MENU - TYPE C</b>                  |                 |             |      |     |         |      |                |                    |                   |                   |
| Beef and Beans                        | 108.9           | 1.7         | 14.3 | 3.1 | 54.0    | 1.9  | 0.436          | 2,068              | 1,899             |                   |
| Sweet and Sour Pork                   | 107.7           | 1.6         | 10.6 | 3.1 | 53.4    | 1.9  | 1.20           | 1,964              | 1,824             |                   |
| Fruit Juice Powder (Lime)             | 13.8            | 0.3         | 0.7  | 0.5 | —       | 1.7  | —              | 232                | 1,682             |                   |
| <b>TOTAL (including common items)</b> |                 |             |      |     |         | 11.7 | 3.68           | 12,062             |                   |                   |

BDL = Below Detectable Limits  
— = Not Analysed

1.

**EMERGENCY FLYING RATION RAAF 1976-77**  
**PACKAGING PROGRAMME PACKED DEC 76**

| COMPONENT       | NET WEIGHT<br>g | COMPOSITION |      |      |         |       |                | VITAMIN<br>mg/PACK | kJ<br>PER<br>PACK | kJ<br>PER<br>100g |
|-----------------|-----------------|-------------|------|------|---------|-------|----------------|--------------------|-------------------|-------------------|
|                 |                 | WATER       | FAT  | ASH  | PROTEIN | SALT  | B <sub>1</sub> |                    |                   |                   |
| Ration Biscuits | 85.5            | 3.8         | 12.8 | 1.4  | 7.8     | BDL   | 0.171          | 1,591              | 1,860             |                   |
| Cereal Block    | 126.1           | 4.8         | 20.0 | 1.4  | 8.9     | BDL   | 0.378          | 2,514              | 1,994             |                   |
| Chocolate       | 160.9           | 4.0         | 22.7 | 1.9  | 6.2     | 0.1   | 3.062          | 3,310              | 2,057             |                   |
| Milk Powder     | 11.2            | 5.1         | 0.5  | 5.1  | 26.0    | 0.4   | 0.097          | 170                | 1,519             |                   |
| Soup Cubes      | 29.3            | 3.7         | -    | 53.9 | 14.2    | 44.7  | BDL            | 209                | 713               |                   |
| Sugar           | 35.7            | -           | -    | -    | -       | -     | -              | 600                | 1,680             |                   |
| Cheese          | 67.3            | 36.3        | 27.8 | 4.8  | 12.5    | 2.4   | 0.123          | 732                | 1,088             |                   |
| Coffee Soluble  | 11.6            | 3.7         | -    | 5.4  | 19.3    | 0.2   | BDL            | 177                | 1,527             |                   |
| Butterscotch    | 77.4            | 0.7         | -    | 0.3  | BDL     | -     | BDL            | 1,288              | 1,664             |                   |
| Salt            | 9.4             | -           | -    | -    | -       | 98.5  | -              | -                  | -                 |                   |
| Beef Block      | 57.6            | 4.2         | 27.0 | 3.1  | 55.1    | -     | 0.023          | 1,224              | 2,125             |                   |
| Fruit Candies   | 93.6            | 0.6         | -    | 0.4  | -       | BDL   | BDL            | 1,557              | 1,665             |                   |
| <b>TOTAL</b>    |                 |             |      |      |         | 24.17 | 3.85           | 13,372             |                   |                   |

BDL = Below Detectable Limits  
 - = Not Analysed

1.

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATE  
COMBAT RATION (ONE MAN)**

| COMPONENT                               | PROTEIN<br>kJ        | FAT<br>kJ             | CHO<br>kJ             | TOTAL<br>kJ   |
|---|----------------------|-----------------------|-----------------------|---------------|
| <b>ITEMS COMMON TO ALL RATION TYPES</b> |                      |                       |                       |               |
| Cereal Block                            | 90                   | 443                   | 658                   | 1,191         |
| Biscuits – Survival                     | 157                  | 671                   | 1,066                 | 1,894         |
| Biscuits – Shortbread                   | 108                  | 641                   | 1,004                 | 1,753         |
| Cheese                                  | 222                  | 410                   | 123                   | 755           |
| Chocolate                               | 50                   | 357                   | 529                   | 936           |
| Chewing Gum                             | –                    | –                     | 268                   | 268           |
| Butterscotch                            | 18                   | 91                    | 762                   | 861           |
| Condensed Milk (Sweet)                  | 112                  | 150                   | 714                   | 976           |
| Sugar                                   | –                    | –                     | 1,416                 | 1,416         |
| Tea Bags                                | –                    | –                     | –                     | –             |
| Coffee Instant                          | 13                   | –                     | 46                    | 59            |
| Salt                                    | –                    | –                     | –                     | –             |
| Butter Concentrate                      | 16                   | 867                   | 12                    | 895           |
| <b>TOTAL (including common items)</b>   | <b>786</b><br>7.1%   | <b>3,620</b><br>32.9% | <b>6,598</b><br>60.0% | <b>11,004</b> |
| <b>MENU – TYPE A</b>                    |                      |                       |                       |               |
| Ham and Egg Ration                      | 256                  | 545                   | 4                     | 805           |
| Curry Powder                            | 8                    | 9                     | 36                    | 53            |
| Beef and Vegetables                     | 341                  | 545                   | 407                   | 1,293         |
| Instant Rice                            | 54                   | 6                     | 734                   | 794           |
| Plum Jam                                | 4                    | –                     | 295                   | 299           |
| Fruit Juice Powder (Orange)             | –                    | –                     | 234                   | 234           |
| Sliced Cling Peaches                    | –                    | –                     | 427                   | 427           |
| <b>TOTAL (including common items)</b>   | <b>1,449</b><br>9.7% | <b>4,725</b><br>31.7% | <b>8,735</b><br>58.6% | <b>14,909</b> |
| <b>MENU – TYPE B</b>                    |                      |                       |                       |               |
| Pork and Beans                          | 238                  | 574                   | 54                    | 866           |
| Curry Powder                            | 8                    | 9                     | 36                    | 53            |
| Corned Beef Hash                        | 328                  | 581                   | 354                   | 1,263         |
| Instant Rice                            | 59                   | 6                     | 738                   | 803           |
| Raspberry Jam                           | 5                    | –                     | 301                   | 306           |
| Fruit Juice Powder (Lemon)              | –                    | –                     | 233                   | 233           |
| Diced Cling Peaches                     | –                    | –                     | 427                   | 427           |
| <b>TOTAL (including common items)</b>   | <b>1,424</b><br>9.5% | <b>4,790</b><br>32.0% | <b>8,741</b><br>58.5% | <b>14,955</b> |

2.

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATE  
COMBAT RATION (ONE MAN)**

| COMPONENT                             | PROTEIN<br>kJ          | FAT<br>kJ              | CHO<br>kJ              | TOTAL<br>kJ   |
|---------------------------------------|------------------------|------------------------|------------------------|---------------|
| <b>MENU – TYPE C</b>                  |                        |                        |                        |               |
| Luncheon Meat (Camp Pie)              | 112                    | 553                    | 286                    | 951           |
| Curry Powder                          | 8                      | 9                      | 36                     | 53            |
| Beef with Gravy                       | 444                    | 1,016                  | 411                    | 1,871         |
| Instant Rice                          | 59                     | 6                      | 738                    | 803           |
| Apricot Jam                           | 4                      | –                      | 305                    | 309           |
| Fruit Juice Powder (Lime)             | –                      | –                      | 234                    | 234           |
| Diced Bartlet Pears                   | –                      | –                      | 355                    | 355           |
| <b>TOTAL (including common items)</b> | <b>1,413<br/>9.1%</b>  | <b>5,204<br/>33.4%</b> | <b>8,963<br/>57.5%</b> | <b>15,580</b> |
| <b>MENU – TYPE D</b>                  |                        |                        |                        |               |
| Sausage and Vegetables                | 132                    | 109                    | 218                    | 459           |
| Soup Powder Beef                      | 1                      | –                      | 159                    | 160           |
| Luncheon Meat                         | 391                    | 923                    | 207                    | 1,521         |
| Blackberry Jam                        | –                      | –                      | 306                    | 306           |
| Potato and Onion Powder               | 99                     | –                      | 664                    | 763           |
| Diced Two Fruits                      | –                      | –                      | 364                    | 364           |
| <b>TOTAL (including common items)</b> | <b>1,409<br/>9.7%</b>  | <b>4,652<br/>31.9%</b> | <b>8,516<br/>58.4%</b> | <b>14,577</b> |
| <b>MENU – TYPE E</b>                  |                        |                        |                        |               |
| Beef and Egg Ration                   | 306                    | 480                    | 15                     | 801           |
| Soup Powder Chicken                   | –                      | 1                      | 198                    | 199           |
| Corned Beef                           | 622                    | 970                    | –                      | 1,592         |
| Peach Jam                             | –                      | –                      | 310                    | 310           |
| Diced Two Fruits                      | –                      | –                      | 364                    | 364           |
| <b>TOTAL (including common items)</b> | <b>1,714<br/>12.0%</b> | <b>5,071<br/>35.5%</b> | <b>7,485<br/>52.5%</b> | <b>14,270</b> |

3.

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATE  
COMBAT RATION (TEN MAN)**

| COMPONENT                               | PROTEIN<br>kJ          | FAT<br>kJ              | CHO<br>kJ              | TOTAL<br>kJ    |
|---|------------------------|------------------------|------------------------|----------------|
| <b>ITEMS COMMON TO ALL RATION TYPES</b> |                        |                        |                        |                |
| Condensed Milk (Unsweetened)            | 1,089                  | 2,110                  | 1,599                  | 4,798          |
| Butter Concentrate                      | 120                    | 11,705                 | 115                    | 11,940         |
| Vegetable Extract                       | 494                    | 11                     | 407                    | 912            |
| Sugar                                   | —                      | —                      | 14,358                 | 14,358         |
| Salt                                    | —                      | —                      | —                      | —              |
| Soluble Coffee                          | 178                    | 4                      | 698                    | 880            |
| Whole Potatoes                          | 496                    | —                      | 3,046                  | 3,542          |
| Tomato Sauce (fortified)                | 54                     | —                      | 1,105                  | 1,159          |
| Tea                                     | —                      | —                      | —                      | —              |
| Curry Powder                            | 59                     | 77                     | 294                    | 430            |
| Bread Supplement (assumed)              | 3,500                  | 1,390                  | 25,249                 | 30,139         |
| <b>TOTAL</b>                            | <b>5,990</b><br>8.8%   | <b>15,297</b><br>22.4% | <b>46,871</b><br>68.8% | <b>68,158</b>  |
| <b>MENU — TYPE A</b>                    |                        |                        |                        |                |
| Mince and Spaghetti                     | 2,998                  | 5,678                  | 2,676                  | 11,352         |
| Beef Noodle Soup Powder                 | 294                    | 192                    | 1,317                  | 1,803          |
| Chopped Pork and Cereal                 | 3,068                  | 52                     | 4,564                  | 7,684          |
| Green Peas                              | 1,704                  | —                      | 760                    | 2,464          |
| Beef with Gravy                         | 5,143                  | 8,994                  | 1,899                  | 16,036         |
| Whole Peeled Tomatoes                   | 743                    | —                      | 109                    | 852            |
| Fruit Pudding                           | 1,046                  | 7,114                  | 13,572                 | 21,732         |
| Raspberry Jam                           | 65                     | —                      | 3,055                  | 3,120          |
| <b>TOTAL (including common items)</b>   | <b>21,051</b><br>15.8% | <b>37,327</b><br>28.0% | <b>74,823</b><br>56.2% | <b>133,201</b> |
| <b>MENU — TYPE B</b>                    |                        |                        |                        |                |
| Luncheon Meat — Type I                  | 3,081                  | 5,836                  | 963                    | 9,880          |
| Steak and Kidney                        | 3,078                  | 7,492                  | 1,622                  | 12,192         |
| Beef and Beans                          | 4,261                  | 5,650                  | 3,481                  | 13,392         |
| Green Peas                              | 1,704                  | —                      | 760                    | 2,464          |
| Whole Kernel Sweet Corn                 | 402                    | 245                    | 3,505                  | 4,152          |
| Fruit Salad                             | 84                     | —                      | 5,092                  | 5,176          |
| Jam — Blackberry                        | —                      | —                      | 3,343                  | 3,343          |
| Tomato Soup Powder                      | 129                    | 376                    | 2,160                  | 2,665          |
| <b>TOTAL (including common items)</b>   | <b>18,729</b><br>15.4% | <b>34,896</b><br>28.7% | <b>67,797</b><br>55.9% | <b>121,422</b> |



4.

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATE  
COMBAT RATION (TEN MAN)**

| COMPONENT                             | PROTEIN<br>kJ          | FAT<br>kJ              | CHO<br>kJ              | TOTAL<br>kJ    |
|---------------------------------------|------------------------|------------------------|------------------------|----------------|
| <b>MENU – TYPE C</b>                  |                        |                        |                        |                |
| Beef and Vegetable Curry              | 2,400                  | 4,222                  | 3,661                  | 10,283         |
| Chicken Noodle Soup Powder            | 320                    | 126                    | 1,365                  | 1,811          |
| Corned Beef                           | 6,158                  | 8,628                  | 150                    | 14,936         |
| Green Beans                           | 199                    | –                      | 1,137                  | 1,336          |
| Steak & Tomato Puree                  | 4,176                  | 4,332                  | 984                    | 9,492          |
| Carrots                               | 16                     | –                      | 1,116                  | 1,132          |
| Sliced Clingstone Peaches             | 150                    | –                      | 5,214                  | 5,364          |
| Jam Strawberry                        | –                      | –                      | 3,421                  | 3,421          |
| <b>TOTAL (including common items)</b> | <b>10,409</b><br>16.8% | <b>32,605</b><br>28.1% | <b>63,919</b><br>55.1% | <b>115,933</b> |
| <b>MENU – TYPE D</b>                  |                        |                        |                        |                |
| Green Beans                           | 199                    | –                      | 1,137                  | 1,336          |
| Fruit Pudding                         | 1,046                  | 7,114                  | 13,572                 | 21,732         |
| Steak and Kidney                      | 3,078                  | 7,492                  | 1,622                  | 12,192         |
| Pea and Ham Soup Powder               | 569                    | 334                    | 1,552                  | 2,455          |
| Jam Apricot                           | –                      | –                      | 3,325                  | 3,325          |
| Beef and Vegetables                   | 2,552                  | 2,171                  | 3,533                  | 8,256          |
| Red Kidney Beans                      | 1,140                  | 114                    | 3,870                  | 5,124          |
| Luncheon Meat – Type 2                | 2,755                  | 4,036                  | 1,973                  | 8,764          |
| <b>TOTAL (including common items)</b> | <b>17,329</b><br>13.2% | <b>36,558</b><br>27.8% | <b>77,455</b><br>59.0% | <b>131,342</b> |

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATES**

**PATROL RATION (ONE MAN) 1976-77**

| COMPONENT                               | PROTEIN<br>kJ         | FAT<br>kJ             | CHO<br>kJ             | TOTAL<br>kJ   |
|---|-----------------------|-----------------------|-----------------------|---------------|
| <b>ITEMS COMMON TO ALL RATION TYPES</b> |                       |                       |                       |               |
| Processed Cheese Sticks                 | 158                   | 228                   | 148                   | 534           |
| Instant Milk                            | 43                    | —                     | 68                    | 111           |
| Chocolate                               | 83                    | 434                   | 540                   | 1,057         |
| Rice                                    | 74                    | 5                     | 736                   | 815           |
| Sugar                                   | —                     | —                     | 1,435                 | 1,435         |
| Coffee Instant                          | —                     | —                     | 153                   | 153           |
| Tea Bags                                | —                     | —                     | —                     | —             |
| Salt                                    | —                     | —                     | —                     | —             |
| Chewing Gum                             | 1                     | 75                    | 221                   | 297           |
| Biscuits — Shortbread                   | 52                    | 609                   | 1,080                 | 1,741         |
| Biscuits — Raspberry Crunch             | 35                    | 559                   | 1,061                 | 1,655         |
| <b>TOTAL</b>                            | <b>446</b><br>5.7%    | <b>1,910</b><br>24.5% | <b>5,442</b><br>69.8% | <b>7,798</b>  |
| <b>MENU — TYPE A</b>                    |                       |                       |                       |               |
| Lamb and Vegetable Curry                | 984                   | 787                   | 368                   | 2,139         |
| Savoury Steak Fingers                   | 1,179                 | 394                   | 392                   | 1,965         |
| Fruit Juice Powder (Orange)             | —                     | 2                     | 237                   | 239           |
| <b>TOTAL (including common items)</b>   | <b>2,609</b><br>21.5% | <b>3,093</b><br>25.5% | <b>6,439</b><br>53.0% | <b>12,141</b> |
| <b>MENU — TYPE B</b>                    |                       |                       |                       |               |
| Beef and Onions                         | 1,071                 | 372                   | 485                   | 1,928         |
| Roast Sliced Pork and Gravy             | 1,045                 | 1,018                 | 254                   | 2,317         |
| Fruit Juice Powder (Lemon)              | —                     | —                     | 234                   | 234           |
| <b>TOTAL (including common items)</b>   | <b>2,567</b><br>20.9% | <b>3,300</b><br>26.9% | <b>6,415</b><br>52.2% | <b>12,277</b> |
| <b>MENU — TYPE C</b>                    |                       |                       |                       |               |
| Beef and Beans                          | 989                   | 588                   | 491                   | 2,068         |
| Sweet and Sour Pork                     | 967                   | 432                   | 565                   | 1,964         |
| Fruit Juice Powder (Lime)               | —                     | 4                     | 228                   | 232           |
| <b>TOTAL (including common items)</b>   | <b>2,402</b><br>19.9% | <b>2,934</b><br>24.3% | <b>6,726</b><br>55.8% | <b>12,062</b> |

6.

**PROPORTION OF ENERGY PROVIDED BY PROTEIN, FAT AND CARBOHYDRATES**  
**EMERGENCY FLYING RATION**  
**1976-77**

| COMPONENT       | PROTEIN<br>kJ       | FAT<br>kJ            | CHO<br>kJ            | TOTAL<br>kJ   |
|-----------------|---------------------|----------------------|----------------------|---------------|
| Ration Biscuits | 112                 | 414                  | 1,065                | 1,591         |
| Cereal Block    | 189                 | 953                  | 1,372                | 2,514         |
| Chocolate       | 168                 | 1,378                | 1,764                | 3,310         |
| Milk Powder     | 49                  | 2                    | 119                  | 170           |
| Soup Cubes      | 70                  | —                    | 139                  | 209           |
| Sugar           | —                   | —                    | 600                  | 600           |
| Cheese          | 141                 | 219                  | 372                  | 732           |
| Coffee Soluble  | 37                  | —                    | 140                  | 177           |
| Butterscotch    | —                   | —                    | 1,288                | 1,288         |
| Salt            | —                   | —                    | —                    | —             |
| Beef Block      | 533                 | 588                  | 108                  | 1,224         |
| Fruit Candies   | —                   | —                    | 1,557                | 1,557         |
| <b>TOTAL</b>    | <b>1,299</b><br>9.7 | <b>3,554</b><br>26.6 | <b>8,519</b><br>63.7 | <b>13,372</b> |

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